

DETERMINATION OF ANTIOXIDANTS IN PINEAPPLE WASTE

ANIZAH BINTI MAHMOD

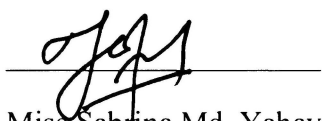
**Final Year Project Report Submitted in
Partial Fulfillment of the Requirement for the
Degree of Bachelor of Science (Hons.) Applied Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

APRIL 2009

This Final Year Project Report entitled “Determination of Antioxidants in Pineapple Waste” was submitted by Anizah binti Mahmud, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by



Prof. Madya Dr. Noriham Abdullah
Supervisor
B. Sc. (Hons.) Food Technology
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Miss Sabrina Md. Yahaya
Project Coordinator
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Dr. Yussairie bin Mohamad
Head of Programme
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date: 27 MAY 2009

ACKNOWLEDGEMENT

Bismillahirrahmanirrahim

In the name of Allah, The Most Gracious and Merciful

Upon completion of this project, I would like to express my gratitude to many parties. Firstly, I would like to thank Allah for His Kindness and Merciful, I can be able to finish this project.

Also, I would like to thank to my supervisor, Dr. Noriham Abdullah for her help, guidance and patience in helping and teaching me during this project. Only Allah can repay your sacrifices and guidance. I also would like to thank Dr Hadiani Ismail and Miss Sabrina Md. Yahaya that also help in completing this project. All the knowledge that you gave me will help me in the future.

Last but not least, I appreciate the support, understanding, care and critics from all my friends. Thank you for everything.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1 INTRODUCTION	
1.1 Background and problem statement	1
1.2 Significance of study	2
1.3 Objectives of study	2
CHAPTER 2 LITERATURE REVIEW	
2.1 Introduction of pineapple (<i>Ananas Comosus</i>)	4
2.2 Source and origin of pineapple	8
2.3 Factors influencing composition and quality of pineapple	12
2.4 Stability of processing and storage	14
2.5 Antioxidants	16
2.5.1 The importance of antioxidants	19
2.5.2 Classification of antioxidants	22
2.5.2.1 Primary antioxidants	22
2.5.2.2 Secondary antioxidants	23
2.5.2.3 Enzymic antioxidants	24
2.5.3 Types of antioxidants	25
2.5.3.1 Natural antioxidants	25
2.5.3.2 Synthetic antioxidants	28
2.6 Constituents and mode of action of plants	30
2.7 UV-Visible spectrophotometry	31
2.7.1 Uses of UV-Visible	31
2.7.2 Instrumentation of UV-Visible	33
CHAPTER 3 METHODOLOGY	
3.1 Materials	
3.1.1 Raw Materials	36
3.1.2 Chemicals	36

ABSTRACT

DETERMINATION OF ANTIOXIDANTS IN PINEAPPLE WASTE

The experiment was conducted to identify the antioxidants activities in the pineapple waste. Three sample were used which are leaves, crown and skin. Three methods were used which are 1,1-diphenyl-2-picrylhydrazyl (DPPH), Ferric Reducing Antioxidant Potential (FRAP) and Total Phenolic Content (TPC). UV-Visible Spectrophotometer was using in this analysis. Using ethanol, leaves show the greatest in the TPC compared to the skin and crown. Leaves shows 11.83mg/100g, followed by crown, 7.49mg/100g and skin, 1.90mg/100g. The results were expressed in Gallic Acid Equivalent (GAE). Leaves also showed the highest scavenging effect compared to the crown and skin. FRAP measures the ability of the extract to donate electron to Fe (III). The higher the FRAP value, the greater is the antioxidant activity. The highest value of FRAP was leaves followed by crown and skin. Crown and skin showed quite similar of ferric reducing potential.